

VERSION WITH MARKINGS TO SHOW CHANGES MADE.

**Endoscope
with disposable cartridges for the invagination of endoscopic tube.**

Description of invention.**BACKGROUND OF THE INVENTION.****1. Field of the Invention.**

The invention relates to the field of medicine, namely to colonoscopy and enteroscopy, but can also be used for industrial endoscopes.

2. Description of Background Art.

Is known the device under U.S.Pat. 4,615,331 from Oct.7, 1986 to Kramann, comprising an endoscopic tube encased in an eversible elastic thin-walled tube which functions as a transporter-invaginator (hereinafter - invaginator) of the endoscopic tube. The invaginator in the device according to this patent is set in long layers parallel to the transported tube. One of the drawbacks of this device is the inconsistent unreeling of invaginator's layers, which is caused by their "sticking together" under air pressure and inevitable getting of air into spaces between them. Untimely eversion of any layer excludes from participation in intubation process the other layers, located above the everted one.

Is known also the intestinal endoscope under the inventor's certificate SU 1522466 from -0000-00-00- April 20, 1999 to Matasov with an invaginator set in pleats and placed at the right angle with an endoscopic tube transported by the invaginator. This endoscope is used as a basis to the present invention and has been taken as a closest prior art. The endoscope according to the closest prior art comprises: - a light source; - a source of excessive pressure; - an endoscopic tube with an eyepiece, a control block having a communication branch-tube and a stop for a spring; - an invaginator of endoscopic tube consisting of an unevolved part encased in an everted part, at that the unevolved part of invaginator tightly adjoins the endoscopic tube and is placed in pleats perpendicularly to it. From the side of the unevolved end the invaginator is supported by a spring and the area of transition of the unevolved part of the invaginator into the everted part is limited by a tip (in the meaning of the „tip cover”) of the endoscopic tube. Furthermore, the endoscope according to the closest prior art comprises: - an external seal of the endoscopic tube to which the end of the everted part of the invaginator is fixed; - rings on the unevolved end of the invaginator; - an air-duct with a cock for feeding working pressure into the cavity of the everted part of the invaginator; - an anal dilator. Endoscopic tube of the closest prior art comprises light and image transmission elements, biopsy channels, channels for gas or liquid supply, and, in addition, comprises two pairs of close-coiled springs with traction lines which are pair-wise connected to the distal ring of a mechanism for bending a distal end of the endoscopic tube and rollers located in the control block and designed for manual extraction of traction lines.

The first drawback of the endoscope according to the closest prior art is unreliable operation of its invaginator resulting in difficulties with introduction of the endoscopic tube into the external seal (see lines 42-53 of the SU 1522466). The invaginator is to be everted under the tip, but during invagination the distal part of the endoscopic tube becomes bared. It can happen because of absence of a gap between the endoscopic tube and the unevolved part of the invaginator and because of a flabby structure of the latter, which cause the invaginator to adhere to the endoscopic tube under the air pressure. Tube pleats formed while bending the

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LISTING OF CLAIMS

1 claim:

Claim 1 (currently amended). An endoscope with disposable cartridges for the invagination of endoscopic tube, comprising

- o an endoscopic tube (3) having a distal part with a guided distal end;
- o a disposable cartridge located on the distal part of the endoscopic tube (3) and comprising an invaginator of the endoscopic tube, which invaginator is an eversible tube in the form of a tube eversible under fluid pressure, with an unevolved end (7) joined with the endoscopic tube (3), and an unevolved part of invaginator formed by pleats into a compact hollow cylinder (23), having a gap (25) with the distal part of the endoscopic tube (3) which is arranged by pleats on the distal part of an endoscopic tube (3), characterized in that the invaginator (23) is formed in a compact hollow cylinder, which has a gap (25) with the endoscopic tube (3).

Claims 2-3 (not entered).

Claims 4-5 (withdrawn).

Claims 6-9 (not entered).

Claims 10-11 (withdrawn).

Claim 12 (currently amended). The endoscope according to any of claims 1 to 6 to claim 1, further comprising characterized in that comprises a mechanism for introduction (53) of the endoscopic tube (3) into the everted part of invaginator, which mechanism comprises a hermetic cavity (60), limited by a cylinder (56), a piston (57), an elastic tube (59) and is connected to fluid pressure in the manner of a cylinder (56) with pistons (57) interconnected with distancers (58) and an elastic tube (59), which limits a cavity (60) which is connected with a source of fluid pressure.

Claim 13 (withdrawn).

Claim 14 (not entered).

Claim 15 (withdrawn).

Claim 16 (not entered).

Claim 17 (currently amended). The endoscope according to any of claims 1 to 6 to claim 1, wherein characterized in that the endoscopic tube (3) comprises a biopsy channel with a cavity connected to sources (69) of fluid pressure an entrance (67) to which is sealed with a seal (64) of a and biopsy forceps (63), which are a flexible hermetic tube with a piston (66) of the biopsy channel on the distal end of said tube and the distal end of the biopsy forceps (63) has a piston (66) of the biopsy channel!

Claim 18 (currently amended). The endoscope according to claim 11 17, wherein characterized in that the biopsy forceps (63) comprise an intensifier (71) of a traction line, which intensifier comprises an executing cylinder-piston unit, located on the distal end of the hermetic tube and of the traction line which forceps comprise a flexible tube connected to a source of fluid pressure, and the distal end of the tube and the traction line of a cutters (70) finishes by a cylinder-piston unit (71).

Claims 19-20 (not entered).

Claim 21-22 (withdrawn).

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*Application Number: 09/509,377**Remarks / Arguments.**Page 1 of 1**Date: 8 May, 2007**Enclosure No. 5***REMARKS / ARGUMENTS**

In the Final Office Action from February 12, 2007 the examiner rejected the claim 1 under 35 U.S.C. 102(d) as being anticipated by SU 1522466. At that was alleged that SU 1522466 discloses the "cartridge (4) ... formed of a compact cylinder (7)" and "Inherently there is a gap between the cylinder and the endoscopic tube".

As there is no arguments in favour of this assertion, the examiner did not cited any.

The absence in SU 1522466 of the subject-matter of the 1st claim is proved in the Appellant's Brief (see section „Argument”, paragraph "Objections concerning the section "Claim Rejections – 35 USC § 102").

The subject-matter of the 1st claim is retained. The amended claim 1 in accordance with CFR 37 § 1.75, is more „particularly pointing out and distinctly claiming the subject matter”.

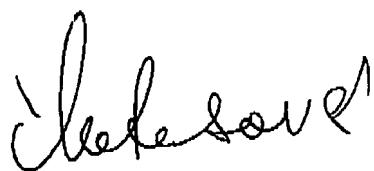
In the Final Office Action from February 12, 2007 the examiner informed that "Claims 12, 17 and 18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph ...".

Claims 12, 17 and 18 are amended in accordance with this objection of examiner. The amended claims 12, 17 and 18 are fully supported in the specification.

In the Enclosure No. 3 is given the Listing of Claims, showing the changes made to Claims from August 10, 2005.

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